

BLR Black Rock Land System

Range of low hills between Orroroo and Peterborough

- Area:** 59.5 km²
- Annual rainfall:** 290 – 420 mm average
- Geology:** Tillites, siltstones and quartzites of the Appila, Saddleworth and Minburra Formations, mantled by soft to rubbly carbonate. There are areas of fine grained alluvium on lower slopes and outwash fans.
- Topography:** Rolling to steep low hills with slopes of 10-30% and minor steep ridges with slopes to 75%. These hills are flanked by a complex of undulating rises (5 - 10% slope) on basement rock and gentle slopes (3 - 5%) formed on locally derived alluvium.
- Elevation:** 440 m to 590 m
- Relief:** Maximum relief is 110 m
- Soils:** Shallow loamy soils over rock are predominant. Deeper calcareous or loam over clay soils are less common.

Main soils

- A2** Shallow calcareous loam on rock - rises and hills
L1 Shallow stony sandy loam - rocky slopes

Minor soils

- C3/D2** Loam over well structured red clay - fans
C2/D1 Shallow loam over red clay on rock - rises
A4 Deep calcareous loam - gently sloping fans
D3 Loam over poorly structured red clay - fans
B2 Shallow calcareous loam on calcrete- rises and hills

- Main features:** The Black Rock Land System is almost entirely moderate to steep hill country with extensive rocky outcrop and surface stone. Grazing of native pastures is the only feasible agricultural use except on some minor semi arable rises. Gently sloping outwash fans are generally too degraded by past erosion for cropping. Retention of surface cover to protect the land from erosion is the main soil management problem.

Soil Landscape Unit summary: 15 Soil Landscape Units (SLUs) mapped in the Black Rock Land System:

SLU	% of area	Main features #
AAH	0.9	Undulating to rolling rises to 30 m high with slopes of 5-20% formed on fine grained rocks. There is extensive rock outcrop and surface stone. Water courses are eroded and there is minor scalding. Main soils: <u>shallow stony sandy loam - L1</u> (E) and <u>shallow calcareous loam on rock - A2</u> (E). The land is non arable due to rocky outcrops and uneven and sometimes moderate slopes. The soils are shallow and usually alkaline. Overgrazing will lead to erosion including gullyng and scalding.
ABB	8.0	Rocky low hills and ridges formed on tillites and siltstones, characterized by significant surface stone and quartzite reefs. ABB Moderately steep to steep rocky low hills up to 90 m high with slopes of 20-30% and some to 40%. There are limited alluvial fans with eroded water courses.
ABC	30.1	
ABD	5.7	
ABJ	9.6	



ABK ABT	11.4 1.3	<p>ABC Rolling low hills with slopes of 10-30%.</p> <p>ABD Steep rocky ridges.</p> <p>ABJ Moderately steep to steep low hills with slopes of 20-40%, eroded water courses. Up to 10% of the land is scalded.</p> <p>ABK Steep to very steep hills with slopes of 30-80% and relief to 200 m, including Black Rock peak.</p> <p>ABT Spurs with side slopes of up to 20%, separated by eroded water courses.</p> <p>Main soils: <u>shallow calcareous loam on rock</u> - A2 (E) with <u>shallow stony sandy loam</u> - L1 (C). <u>Deep calcareous loam</u> - A4 (M) and <u>loam over well structured red clay</u> - C3/D2 (M) occur on small outwash fans. The land is non arable and largely inaccessible due to steep slopes and rocky reefs. Soils are shallow (low waterholding capacities) and mostly alkaline. Erosion potential is high to very high, so over-grazing can have very serious consequences.</p>
APB APE	4.4 12.3	<p>Rises and hills formed on medium, fine and coarse grained rocks of the Appila Tillite. Rock outcrop and surface stone are extensive.</p> <p>APB Undulating to moderately steep ridges, slopes 10-20% and relief to 30 m.</p> <p>APE Steep low hills with relief to 200 m (Depot Hill) and slopes of 30-100%. Includes limited areas of outwash fans with eroded water courses.</p> <p>Main soils: <u>shallow calcareous loam on rock</u> - A2 (E) and <u>shallow stony sandy loam</u> - L1 (E). <u>Deep calcareous loam</u> - A4 (M) and <u>loam over well structured red clay</u> - C3/D2 (M) occur on small outwash fans. This land is non arable due to steep slopes, rocky outcrop and shallow soils. The sandier soils mean that the land is less fertile than associated slopes with loamier soils.</p>
EFC	0.6	<p>Undulating stony rises with slopes of 3-6% formed on basement rocks.</p> <p>Main soils: <u>shallow calcareous loam on rock</u> - A2 (V) or <u>calcrete</u> - B2 (L). The land is arable, although low rainfall and low water holding capacities of the mostly shallow soils mean in practice that grazing is generally the preferred land use.</p>
ETH	4.5	<p>Rises with slopes of 3-10% and rocky reefs occupying 20-50% of the land surface. The remainder is arable.</p> <p>Main soils: <u>shallow calcareous loam on rock</u> - A2 (E) or <u>calcrete</u> - B2 (L), and <u>shallow loam over red clay on rock</u> - C2/D1 (E). <u>Shallow stony sandy loam</u> - L1 (L) is restricted to rocky areas. This land is semi arable, due to patchy rock outcrop. Arable land has mostly shallow soils, but is potentially productive given reasonable rainfall distribution.</p>
EWC	0.8	<p>Complex of low rises on basement rock and outwash fans. Slopes are less than 5%.</p> <p>Main soils: <u>shallow calcareous loam on rock</u> - A2 (C) or <u>calcrete</u> - B2 (M) and <u>shallow loam over red clay on rock</u> - C2/D1 (C) on the rises, and <u>deep calcareous loam</u> - A4 (C) and <u>loam over well structured red clay</u> - C3/D2 (C) on fans.</p>
EZC EZH	3.0 0.9	<p>Complex of basement rock rises with slopes of 5-10%, and gently inclined outwash slopes of 3-5%.</p> <p>EZC Non eroded slopes.</p> <p>EZH Slopes with eroded water courses.</p> <p>Main soils: <u>shallow calcareous loam on rock</u> - A2 (E) or <u>calcrete</u> - B2 (L) on the rises, and <u>deep calcareous loam</u> - A4 (L) and <u>loam over well structured red clay</u> - C3/D2 (L) on outwash slopes. The land is potentially arable although shallow soils have restricted water holding capacities. Fertility, surface hard setting and erosion potential are slight to moderate limitations. However, low rainfall precludes regular cropping, and opportunistic cropping destroys the perennial shrub cover. Consequently grazing is the main land use.</p>
JZH	6.5	<p>Outwash fans with limited basement rock rises. Slopes of fans are 3-5%. Water courses are severely eroded and there is sporadic scalding.</p> <p>Main soils: <u>loam over poorly structured red clay</u> - D3 (E), <u>loam over well structured red clay</u> - C3/D2 (E) and <u>deep calcareous loam</u> - A4 (L). Soils on rises are as for ETH. Use of this land is restricted by the effects of historical degradation – sheet erosion, gully erosion and scalding.</p>

PROPORTION codes assigned to soils within Soil Landscape Units (SLU):

- (D) Dominant in extent (>90% of SLU)
- (V) Very extensive in extent (60–90% of SLU)
- (E) Extensive in extent (30–60% of SLU)
- (C) Common in extent (20–30% of SLU)
- (L) Limited in extent (10–20% of SLU)
- (M) Minor in extent (<10% of SLU)



Detailed soil profile descriptions:

- A2** Shallow calcareous loam on rock (Paralithic, Calcic / Lithocalcic Calcarosol)
Shallow and stony calcareous sandy loam to sandy clay loam grading to soft (Class III A) or rubbly (Class III B or III C) carbonate over weathering rock within 50 cm.
- A4** Deep calcareous loam (Regolithic, Lithocalcic / Hypercalcic Calcarosol)
Calcareous sandy loam to sandy clay loam grading to soft or rubbly carbonate within 50 cm over alluvium.
- B2** Shallow calcareous loam (Petrocalcic, Calcic / Lithocalcic Calcarosol)
Shallow and stony calcareous sandy loam to sandy clay loam grading to soft (Class III A) or rubbly (Class III B or III C) calcrete capped basement rock within 50 cm.
- C2/D1** Shallow loam over red clay on rock (Calcic, Red Dermosol / Chromosol)
Medium thickness loam over a red well structured stony clay, calcareous with depth, grading to weathering basement rock within 100 cm.
- C3/D2** Loam over well structured red clay (Hypercalcic / Calcic, Red Dermosol / Chromosol)
Firm to hard sandy loam to clay loam overlying a well structured red clay with abundant soft Class I carbonate at shallow depth. Change from surface to subsoil is gradual in Dermosols and abrupt in Chromosols.
- D3** Loam over poorly structured red clay (Hypocalcic / Hypercalcic, Red Sodosol)
Medium thickness hard setting sandy loam to clay loam, with up to 20% quartzite stones, overlying a red coarsely structured clay, calcareous with depth.
- L1** Shallow stony sandy loam (Calcareous, Paralithic, Leptic Tenosol)
Non calcareous stony sandy loam to sandy clay loam grading to calcareous weathering rock within 50 cm.

Further information: [DEWNR Soil and Land Program](#)

